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III. Remarks

ELECTION/RESTRICTIONS

The Examiner states at paragraph 1/page 2 that the applicant has elected with traverse of claims 10-21. The Examiner also states that "...However, the restriction requirement between the process claims and the apparatus claims is still deemed proper." Your applicant will file a divisional regarding the process claims. Your applicant respectfully acknowledges that remaining are the applicant's claims to an "apparatus".

CLAIM OBJECTIONS

At page 2-3 paragraph 3 the Examiner states that Claims 11, 13, 14 and 17 are objected to because of the following informalities:

In claim 11, line 2: "having" should be deleted and in claim 11, line 9: "contains" should be changed to -contains-. Claim 11 has been amended as follows:

a. the heat exchanger tank (60) having has a water or coolant supply inlet (67) and water or coolant discharge (69); the heat exchanger tank (60) containing water (65); fuel gas (44) is bubbled through the water (65) and exhausted from the heat exchanger tank (60) at the heat exchanger tank exhaust (71);

c. the fuel conditioner means (100) contains contains fuel means (120); bubble forming means (115) is provided by directing the fuel conditioner input means (110) via pipe or tube means (110) to and through a grid (116) formed of fine wire mesh or a plate with at least one aperture (117); the bubble forming means (115) is submerged beneath a fuel means (120) surface (125);

In claim 13, line 5: "conditione" should be changed to -conditioner-. Claim 13 has been amended as follows:

a. supplemental heat exchanger means (62) is comprised of a tube heat exchanger; fuel means (120) includes but is not limited to diesel, peanut oil, vegetable oils and other combustible substances for engine means (160) combustion/ pump

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1 means (140) exerts a vacuum at the fuel conditioned output (130)...

2 In claim 14, line 10: "(117" should be changed to -(117)-. Claim 14 has been
3 amended as follows:

4 c. bubble forming means (115) is provided by directing the fuel
5 conditioner input means (110) via pipe or tube means (110) to and through a grid
6 (116)formed of fine wire mesh or a plate with at least one aperture (117)_.
7

8 In claim 17, line 2; "reservior" should be changed to -reservoir-. Claim 17 has
9 been amended as follows:

10 a. the water or coolant discharge (69) is discharged to a ~~reservior~~ reservoir
11 for agricultural uses;

12 With these amendments, the Examiner is requested to withdraw the objections re:
13 Claims 11, 13, 14 and 17.

14 **CLAIM REJECTIONS UNDER 35 USC 112**

15 The Examiner rejects claims 10-21 under 35 USC 112, second paragraph, as being
16 indefinite for failing to particularly point out and distinctly claim the subject matter which
17 applicant regards as the invention.

18 **GENERAL COMMENTS:** At paragraph 4/page 3 the Examiner observes that
19 the claims are generally narrative and indefinite, failing to conform with current U.S.
20 practice. The Examiner does not recite authority for this statement. Your applicant
21 respectfully observes that there is substantial latitude in style of stating claims.
22

23 At paragraph 4/page 3 the Examiner states that the "...Claims appear to be a literal
24 translation into English from a foreign document..." The Examiner has not cited a
25 foreign document in support of this assertion. The Examiner has cited a foreign
26 document, the patent to Matsunaga, in support of the Examiner's rejections under 35

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1 USC 103. The statement that the claims appear to be a literal translation into English
2 from a foreign document may suggest that the applicant has specific knowledge of prior
3 art which the applicant has not disclosed in this patent application. Your applicant
4 respectfully refutes the implication. Your applicant respectfully assures the Examiner and
5 the USPTO that your applicant has not translated from any document, including any
6 foreign document, in the drafting of claims. Your applicant has not withheld knowledge
7 of prior art in the submission of this patent application. Your applicant respectfully
8 asserts compliance with CFR 1.56 in the filing of this application.

9 At paragraph 4/page 3 the Examiner states that the claims "...are replete with
10 grammatical and idiomatic errors." Your applicant respectfully acknowledges that
11 stylistic differences exist in the drafting of patent applications and claims.
12

13 **REGARDING THE 35 USC 112 REJECTIONS**

14 **REGARDING CLAIM 10:** At page 3, paragraph 4, the Examiner addresses Claim 10.
15 Your applicant observes the interrelating of "process" and "apparatus" statements in
16 Claim 10. Your applicant acknowledges that the claims remaining in this application are
17 to an "apparatus" and thus claim 10 has been amended to eliminate process references
18 and to add apparatus/structure claims.

19 The Examiner, page 3 paragraph 4, states that re: claim 10, it is unclear as to
20 whether applicant is attempting to positively recite the "biomass" in the claim limitation
21 of, "a reaction chamber receiving biomass" in line 2. Your applicant has amended claim
22 10 to strike this reference to "biomass" in line 2.

23 The Examiner, page 3 paragraph 4, states that "Thus, it is further unclear as to
24 whether the "charcoal production bed" formed by the biomass is to be considered an
25 element of the apparatus. The "charcoal production bed" is not an element of the
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1 apparatus and has been stricken by the amendment of claim 10. However, the reaction
2 chamber (30) is divided into upper, intermediate and lower segments, which relate to the
3 biomass and charcoal production bed, of an upper layer (13), an intermediate layer (14)
4 and a lower layer (15).

5 At page 3, paragraph 4 the Examiner states that "In addition, it is unclear as to the
6 relationship between "a single reaction chamber" (line 6) and "a reaction chamber" set
7 forth in line 2. The single reaction chamber and a reaction chamber are the same element.

8 At page 3, paragraph 4, the Examiner states that "also, it is unclear as to the
9 relationship between "a pyrolysis zone...at the intermediate layer" (line 6) and "an
10 intermediate layer pyrolysis zone" set forth in lines 4-5. Claim 10 has been amended to
11 eliminate these references.

12 At page 4, paragraph 4, the Examiner states "Also, it is unclear as to the
13 relationship between "an intermediate layer" (line 8) and "an intermediate layer" set forth
14 in lines 3-4. Claim 10 has been amended to eliminate these references.

15 At page 4, paragraph 4, the Examiner states "Also, it is unclear as to the structural
16 relationship of the "outlet means" (line 9) to the other elements of the apparatus. Claim
17 10 has been amended as follows:

18 b. an outlet means (43), from the reaction chamber (30), for fuel gas (44)
19 output is directed into a heat exchanger means (60) at a heat exchanger tank (60);
20 and into a water or coolant reservoir (65); heat exchanger tank (60) exhaust is via
21 a heat exchanger tank exhaust (71);

22 At page 4, paragraph 4, the Examiner states "Furthermore, the language of the
23 claim in lines 9-18 is directed to a method limitation which renders the claim vague and
24 indefinite because it is unclear as to the particular structural limitations applicant is
25 attempting to recite..." Claim 10 has been amended to eliminate process claim terms and
26 to thereby include the "fuel gas output" (line 9), the "heat exchanger tank exhaust" (lines
27 10-12), the "demister input/output" (line 14) and the "fuel conditioner input/output"

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1 (lines 15-17) as elements of the apparatus. The Examiner is referred to the amended
2 claim 10.

3 At page 4, paragraph 4, the Examiner states that "Furthermore, it is unclear as to
4 the relationship between the "heat exchanger tank (60) exhaust" in line 11 and the "heat
5 exchanger tank exhaust (71)". The heat exchanger tank exhaust (71) is the pipe through
6 which the heat exchanger tank (60) gasses are expelled.

7
8 **REGARDING CLAIM 11:** At page 4 the examiner states that "Regarding claim 11, it is
9 unclear as to the structural relationship of both the "water or coolant supply inlet" and the
10 "water or coolant discharge" (line 2) to the other elements of the apparatus. The water or
11 coolant supply inlet (67) and the water or coolant discharge (69) are valve controlled to
12 regulate the water level in the heat exchanger tank (60). The Examiner is directed to the
13 Specification page 13/lines 1-2 and lines 28-29.

14 At page 4, paragraph 4, the Examiner states that "Also, it is unclear as to the
15 relationship between the "heat exchanger tank" (line 3) and the "heat exchanger tank" set
16 forth in claim 10, line 11. The heat exchanger tank of claim 10 is the same heat
17 exchanger tank of claim 11.

18 At page 4, paragraph 4, the Examiner states that "Also, it is unclear as to the
19 relationship between the "demister means" (line 6) and the "demister means" set forth in
20 claim 10, line 13. The demister means of claim 10 is the same demister means of claim
21 11.

22 At page 4, paragraph 4, the Examiner states that "Also, it is unclear as to the
23 relationship between "a demister input" (line 6) and "a demister input" set forth in claim
24 10, lines 13-14." Claim 11 has been amended to recite "the demister input".

25 At page 4, paragraph 4 the Examiner states "Also, it is unclear as to the
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1 relationship of the "bubble forming means" (lines 9-10) to the "bubble forming means"
2 set forth in claim 10, lines 15-16. Claim 11 has been amended to state "the bubble
3 forming means".

4 At page 4, paragraph 4 the Examiner states "also, "the fuel conditioner input
5 means" (line 10) lacks proper positive antecedent basis. Claim 11 has been amended to
6 state "a fuel conditioner input means (110)."

7 At page 4, paragraph 4, the Examiner states "Also, it is unclear as to the
8 relationship between "a fuel means" (lines 12-13) and the "fuel means" set forth in claim
9 10, line 16. Claim 11 has been amended to state "the fuel means".

10
11 **REGARDING CLAIM 12:** At page 5, paragraph 4, the Examiner states "Regarding
12 claim 12, it is unclear as to the relationship between the "heat exchanger means" (line 2)
13 and the "heat exchanger means" set forth in claim 10, line 10. The reference in claim 12
14 has been amended to "the heat exchanger means".

15 At page 5, paragraph 4, the Examiner states "Also, "the heat exchanger water or
16 fluid content" (lines 4-5) lacks proper positive antecedent basis. Claim 12 has been
17 amended to state "a heat exchanger water or fluid content (65)".

18
19 **REGARDING CLAIM 13:** At page 5 paragraph 4 the Examiner states "Regarding claim
20 13, the recitation of "fuel means (120) includes but is not limited to diesel, peanut
21 oil...substances" (lines 3) is considered vague and indefinite because it is unclear as to the
22 scope of the limitation. Claim 13 has been amended to state "fuel means (120) includes
23 ~~but is not limited to~~ diesel, peanut oil..."

24 At page 5 paragraph 4 the Examiner states "Also, it is unclear as to what structural
25 element is being recited by, "engine means (60) combustion/ pump means (140)" (line 4).

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1 Engine means (160) is addressed in the Specification as follows: 1. Page 4/lines
2 18-19 (*Fuel gas is discharged to a heat exchanger, a demister, a fuel conditioner and to*
3 *either storage or combustion in an engine means.*); 2. Page 5/lines 10-15 (*FIG. 3 is a flow*
4 *diagram showing the fuel gas output (44) from the invention of FIG. 1. Illustrated is the*
5 *introduction of hot fuel gas (44) into a heat exchanger means (60) and into a water or*
6 *coolant reservoir (65) with the exhaust of the cooled fuel gas seen as output from water*
7 *or coolant reservoir (65) directed to a demister means (80) followed by directing the*
8 *demister output (82) to a fuel conditioner means (100) where said fuel conditioner output*
9 *(130) is stored or combusted in an engine means (140).); 3. Page 13/lines 23-27 (*The fuel*
10 *conditioner output (130) will be a mixture of fuel gas (44) and fuel means (120) which is*
11 *exhausted via pump means (140) exerting a vacuum at the fuel conditioner output (130).*
12 *Fuel conditioner output (130) is directed to a storage or combustion at an engine means*
13 *(160).*). The phrase "...engine means (60) combustion/ pump means (140) at Claim 13 is
14 amended to refer to combustion at an engine means (160) followed by a reference to the
15 pump means (140) as follows:*

16 a. supplemental heat exchanger means (62) is comprised of a tube heat exchanger;
17 fuel means (120) includes ~~but is not limited to diesel, peanut oil, vegetable oils~~
18 and other combustible substances for engine means (160) combustion; pump
19 means (140) exerts a vacuum at the fuel conditioned output (130) and fuel
20 conditioner output (130) is directed to the [a] storage or combustion at an engine
21 means (160);

22 At page 5, paragraph 4 the Examiner states "Also, it is unclear as to the
23 relationship between "a storage or combustion at an engine means" (line 6) and "a storage
24 or combustion at an engine means" set forth in claim 10, line 19. Claim 13 has been
25 amended as follows:

26 a. supplemental heat exchanger means (62) is comprised of a tube heat exchanger;
27 fuel means (120) includes ~~but is not limited to diesel, peanut oil, vegetable oils~~
28 and other combustible substances for engine means (160) combustion; pump
29 means (140) exerts a vacuum at the fuel conditioned output (130) and fuel

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1 conditioner output (130) is directed to the [a] storage or combustion at an engine
2 means (160);

3 **REGARDING CLAIM 14:**

4 At page 5 paragraph 4 the Examiner states "Regarding claim 14, it is unclear as to
5 the structural limitation applicant is attempting to recite in lines 8-9 because the "fuel
6 conditioner output" is not considered an element of the apparatus.

7 Claim 14 has been amended as follows:

8 ~~a. the fuel conditioner output (130) is in the range of 5% to 20% diesel with the~~
9 ~~balance comprised of fuel gas (44);~~

10 At page 5 paragraph 4 the Examiner states "also, it is unclear as to the relationship
11 between "a fuel conditioner means input" (line 4) and "a fuel conditioner means input"
12 set forth in claim 10, line 15.

13 Claim 14 has been amended as follows:

14 a.[b.] conditioner means (100) having [a] the fuel conditioner means input (110)
15 from the demister means (80) conveying fuel gas (44); the fuel conditioner means
16 input (110) directing fuel gas (44) through bubble forming means (115) into and
17 through [a]the fuel conditioner means (100) containing fuel means (120);

18 At page 5 paragraph 4 the Examiner states "Also, it is unclear as to the
19 relationship between "a fuel conditioner means" (lines 6-7) and "a fuel conditioner
20 means" set forth in claim 10, line 16. Claim 14 has been amended to read "[a]the fuel
21 conditioner means...".

22 At page 5 paragraph 4 the Examiner states "Also, it is unclear as to the
23 relationship between "a grid" (line 9) and "a grid" set forth in claim 11, line 11. Claim 14
24 has been amended to read "[a]the grid..." at line 9.

25 At page 5, paragraph 4 the Examiner states "Also, it is unclear as to the
26 relationship between "a plate" line 10) and "a plate" set forth in claim 11, line 11. Claim

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1 14 has been amended to state "[a]the plate" at the former line 11.

2
3 **REGARDING CLAIM 15:**

4 At page 5 paragraph 4 the Examiner states "Regarding claim 15, it is unclear as to
5 the structural limitation applicant is attempting to recite in lines 2-3 because the "fuel
6 conditioner output" is not considered an element of the apparatus.

7 Claim 15 has been amended as follows:

8 ~~a. the fuel conditioner output (130) will be diesel in the range of 5% to 10% and~~
9 ~~fuel gas (44) at 95% to 90%;~~

10 **REGARDING CLAIM 16:**

11 At page 5 paragraph 4 the Examiner states "Regarding claim 16, "the conditioned
12 fuel gas" (line 2) lacks proper positive antecedent basis. Claim 10 has been amended to
13 recite antecedent basis as follows:

14 c. the heat exchanger tank exhaust (71) is directed into a demister means (80) at a
15 demister input (81); the demister means (80) accumulates condensate (83); a
16 demister output (82) is directed into a fuel conditioner means input (110), through
17 a bubble forming means (115) and into and through a fuel conditioner means
18 (100) containing fuel means (120); a [the] fuel conditioner output (130) is
19 exhausted via pump means (140) exerting a vacuum at the fuel conditioner output
20 (130); fuel conditioner output (130) is directed to a storage or combustion at an
21 engine means (160); demister means (80) is comprised of at least one tube (81).

22 At page 5 paragraph 4 the Examiner states "Also, "the engine intake manifold"
23 lakes proper positive antecedent basis. Claim 16 has been amended as follows:

24 a. the conditioned fuel gas (130) is be introduced directly into an [the] engine
25 intake manifold.

26
27 **REGARDING CLAIM 18:**

28 At page 6 paragraph 4 the Examiner states "Regarding claim 18, the "chemicals"
and the "potassium" lack proper positive antecedent basis. Claim 18 has been cancelled.

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REGARDING CLAIM 19:

At page 6 paragraph 4 the Examiner states "regarding claim 19, "the removal means" (lined 8 and 9) lacks proper positive antecedent basis.

Claim 19 depends from claim 10. Claim 10 has been amended, at subpart a., as follows:

apparatus; a removal means (45), seen as an auger, for removal of charcoal;
b. an outlet means (43), from the reaction chamber (30), for fuel gas (44) output is

At page 6 paragraph 4 the Examiner states "Also, the "charcoal removal system" (lines 8-9) lacks proper positive antecedent basis. Claim 19 has been amended as follows:

c. a charcoal discharge funnel means (230) is formed intermediate the lower layer (15) and the removal means (45) which directs the charcoal away from walls (42) of ~~the~~ a charcoal removal system (40) and toward the removal means (45);

REGARDING CLAIM 21:

At page 6 paragraph 4 the Examiner states "Regarding claim 21, "the charcoal collection means (41) arena" lacks proper positive antecedent basis; that "heat exchanger ports (264)" lacks proper positive antecedent basis; and that "charcoal removal system" lacks proper positive antecedent basis. Claim 21 has been amended, with antecedent basis at the Specification, page 15/lines 20-24, as follows:

a. a charcoal heat exchanger means (260) provided by at least one tube (262) penetrating a [the] charcoal collection means (41) arena via a plurality of heat exchanger ports (264) at a charcoal removal system (40) having a the charcoal removal system wall (42);

NEW CLAIMS: REGARDING NEW CLAIMS 22-28:

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1 New claims 22-28 have been added. It is believed that the addition of new claims
2 will not require payment of additional fees.

3
4 **ANTECEDENT BASIS FOR AMENDMENTS**

5 Antecedent basis for the amendments is found in the Specification. The structure
6 of the reaction chamber of the present invention is addressed in the specification as
7 follows:

8 1. page 3/lines 20-29 (the apparatus includes a reaction chamber which is open at
9 its lower end; Air is drawn down through the reaction chamber from above the pyrolysis
10 zone and fuel gas exits from the apparatus.);

11 2. page 4/lines 28-page 5/line 8 (FIG. 1 is a cross-sectional diagram of the
12 invention showing a charcoal production bed (10) in a single reaction chamber (30)
13 where the production bed (10) comprises in sequence (a) an upper layer (13) of biomass
14 input material, (b) an intermediate layer (14) pyrolysis zone layer ..., and © a lower layer
15 (15) comprising substantially only hot charcoal....; the charcoal production bed having an
16 outlet means (43) for fuel gas. The reaction chamber (30) receives air input (50) at the
17 upper layer (13); removal means (45), seen as an auger, for removal of charcoal);

18 3. page 5/lines 23-27 (The reaction chamber (30) may be composed of heat and
19 corrosion resistant materials including, for example, fiber-ceramic insulating material,
20 lined interiorly with unreactive inconel or stainless steel metal, either of which resist
21 attack from oxygen. In the preferred embodiment the reaction chamber will have a
22 circular cross-section but may be formed with a variety of cross-sections.);

23 4. page 5/line 30-page 6/line 12 (In the preferred embodiment diameter of the
24 reaction chamber (30) is substantially uniform along its length, except for the uppermost
25 portion or upper layer (13), which may be slightly flared to accommodate a head of
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1 biomass (20) which may be comprised, for example, of fuel pellets, vegetable matter and
2 other organic matter as will be appreciated by those of ordinary skill in the art. Biomass
3 (20), in the preferred embodiment is delivered by delivery means (16) into the reaction
4 chamber (30) by an motor controlled auger (16). In the preferred embodiment a light
5 detection means, provided in the preferred embodiment as a electric eye (22), is mounted
6 by mounting means at a top (31) of the reaction chamber (30). The electric eye (22) set
7 provides a switch function electrically communicating with a motor drive for the motor
8 controlled auger (16) causing power to the motor controlled auger (16) when the electric
9 eye (22) detects the absence of biomass. Delivery means (16) may include hoppers,
10 conveyors, augers and other such feed or delivery devices. The preferred embodiment for
11 delivery means (16) is by motor controlled auger (16).);

12 5. page 6/lines 22-26 (Seen is charcoal removal system (40) comprised of removal
13 means (45), shown for example as an auger but which may be provided by a valve
14 controlled chute, screw drive and other lift or moving devices; also seen as a part of a
15 removal system (40) is the conveyance or routing means (34) and charcoal storage means
16 (36).);

17 6. page 6/lines 27-page 7/line 14 (Control of removal means (45) is effected by
18 temperature sensing means, e.g., thermocouples or other recognized temperature sensing
19 devices, positioned in the reactor chamber (30) where the temperature sensing means has
20 an output received by a controller for a delivery means (16). In the preferred embodiment
21 temperature sensing means is provided by at least one thermocouple (24) at the upper
22 layer (13) and in the preferred embodiment by one or a plurality of thermocouples (24),
23 e.g., in the preferred embodiment by three thermocouples (24) positioned respectively at
24 the upper layer (13), intermediate layer (14) and at the delivery means (16). In the
25 preferred embodiment a thermocouple positioned in the reactor chamber (30) at the
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1 intermediate layer (14) will detect a temperature change indicating the rising of the
2 pyrolysis zone and will provide switch means for the control of a motor controlled auger
3 removal means (45) to move the intermediate layer (14) down in the reaction chamber
4 (30); a thermocouple at the top (31) of the reaction chamber (30) will provide high
5 temperature information for safety shutdown of a fuel gas pump (42) thereby terminating
6 air flow and the operation of the system; a third thermocouple at the delivery means (16)
7 provides additional high temperature sensing and safety control for pump (42) control.
8 Circuit interconnections from one or a plurality of thermocouples to controllers are not
9 shown and are not claimed herein as inventive elements of this disclosure.);

10 7. page 7/line 27-page 8/line 5 (Following ignition of the lower layer top (33),
11 biomass (20) is added forming the upper layer (13) and atmospheric air (50) is moved
12 downwardly through the reaction chamber (30) and production bed (10) by means of a
13 pump (42) which is typically located in fuel gas outlet means (43) line so that air (50) is
14 drawn into and through the reaction chamber (30) from the atmosphere above the reaction
15 chamber (30) in that the pressure in the reaction chamber (30) is less than atmospheric.
16 The intermediate layer (14) forms the pyrolysis zone as air (50) is drawn through the
17 production bed (10). Alternatively, a source of pressurized air may be used at the top
18 (31) of the reaction chamber (30) to force air (50) through the reaction chamber (30) and
19 out the outlet means (43).).

20 8. page 15/line 5-24 (*A similar obstructing event occurs at the discharge of*
21 *charcoal from the lower layer (15) to the charcoal removal system (40). The charcoal*
22 *from the lower layer (15) falls into the charcoal removal system (40) and tends, toward*
23 *the walls of the charcoal removal system (42) to stack and not readily advance toward*
24 *the removal means (45). The introduction of a charcoal discharge funnel means (230)*
25 *intermediate the lower layer (15) and the removal means (45), directs the charcoal away*

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1 from the walls (42) of the charcoal removal system (40) and toward the removal means
2 (45). The slope, θ (210, 240) of the funnel means (200) at the funnel side (220), relative
3 to a vertical, and of the charcoal discharge funnel means (230) at the charcoal discharge
4 funnel slope (240), in the preferred embodiment, will be greater than approximately 45
5 degrees and are preferred at approximately 60 degrees. Both the funnel means and the
6 charcoal discharge funnel means (230) are primarily inverted conical in structure. Other
7 cross sections will be equivalent as will be appreciated by those of ordinary skill in the
8 funnel arts.

9 The high temperature of collecting charcoal at the charcoal removal system (40)
10 and charcoal collection means (41) provides heat to be captured by introduction of a
11 charcoal heat exchanger means (260) provided, in the preferred embodiment by at least
12 one tube (262) penetrating the charcoal collection means (41) arena via heat exchanger
13 ports (264) at the charcoal removal system wall (42).)

14
15 **CLAIM REJECTIONS UNDER 35 USC 103**

16 A brief statement of law re: 35 U.S.C. 103: The absence of a feature similar to
17 the feature or features of the present invention are respectfully argued as references which
18 teach away from the disclosed and claimed invention and thus are not appropriately a
19 basis of rejection under 103. *In re Gurley* 27 F.3d 551 at 553(1994 cafc). In general a
20 reference will teach away if the line of development flowing from the references
21 disclosure is unlikely to be productive of the result sought by the applicant.

22
23 1. Re: Matsunaga and "a heat exchanger means (i.e., a recuperator 3)" at paragraph 5,
24 page 6.

25 The Examiner, at page 6 of the Examiner's Action, has rejected claim 10 under 35

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1 USC 103(a) as being unpatentable over Matsunaga (JP 2000-152799) in view of Feters
2 et al. (US 4,530,702) and Funk (US 5,104,419).

3 Your applicant respectfully reviews the applicant's invention prior to addressing
4 Matsunaga. As illustrated by Fig. 3 and addressed in the Brief Description of the
5 Drawings re: Figure 3, output of the pyrolysis chamber is "hot fuel gas (44) into a heat
6 exchanger means (60) and into a water or coolant reservoir (65) with the exhaust of the
7 cooled fuel gas seen as output from water or coolant reservoir (65) directed to a demister
8 means (80) followed by directing the demister output (82) to a fuel conditioner means
9 (100) where said fuel conditioner output (130) is stored or combusted in an engine means
10 (140).

11 Emphasis is first given to your applicant's "heat exchanger means (60) and water
12 or coolant reservoir (65)...". Greater definition will be appreciated, from Fig. 3 and the
13 discussion at page 12/line 24 to page 13/line 5 stating:

14 "Heat exchanger means (60), in the preferred embodiment is the direction of the
15 hot fuel gas (44) into a heat exchanger tank (60) containing water (65) wherein
16 the hot fuel gas (44) bubbles through the water (65) to be exhausted from the heat
17 exchanger tank (60) at a heat exchanger tank exhaust (71). Heat exchanger
18 means (60) may be supplemented by a supplemental heat exchanger means (62)
19 comprising structure from generally recognized heat exchanger means including
20 but not limited to a tube heat exchanger wherein the hot fuel gas (44) is received
21 into a supplemental heat exchanger means (62) which is positioned within the
22 heat exchanger tank (60) and is in fluid contact with the heat exchanger tank (60)
23 contents, including as indicated in this application, water (65) with the cooled
24 fuel gas (44) then exhausted at a heat exchanger tank exhaust (71). Those of
25 ordinary skills in the heat exchanger arts will recognize other heat exchanger
26 structures equivalent to a tube heat exchanger.

27 The structure on which to immediately focus is the structure receiving the "hot
28 fuel gas (44)" of:

29 "a heat exchanger means (60) and into a water or coolant reservoir (65) with the
30 exhaust of the cooled fuel gas seen as output from water or coolant reservoir (65)
31 directed to a demister means (80)..."

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1 These structural aspects of your applicant's invention, as seen in Fig. 3 and
2 addressed as indicated at page 12-13, are distinguished from that portion of Matsunaga's
3 structure which is indicated to receive fuel gas as a "heat recovering apparatus 3" as
4 stated at page 1 of the Abstract of the Matsunaga patent 2000-152799 and as described at
5 paragraph [0017] where the Matsunaga patent states in part:

6 "...Synthesis gas is supplied to recuperator 3 through the supply way 6.
7 Recuperator 3 collects the heat obtained by the pyrolysis of biomass. The
8 collected heat - a methane fermentation tank - warming - a means 19 - the self of
9 a methane fermentation tank - it is used for warming...."

9 The Examiner will appreciate that the Matsunaga patent does not describe the
10 structure of "Recuperator 3". Your applicant respectfully suggests that the "Recuperator
11 3" of Matsunaga is a heat exchanger means without suggestion of the structure to
12 accomplish heat exchanging.

13 This is contrasted with the "structure" of your applicant's invention which
14 likewise received hot fuel gas (44). Your applicant's "structure" is more than a heat
15 exchanger. Hot fuel gas (44) of the present invention is exhausted into

16 a heat exchanger means (60) and into a water or coolant reservoir (65) with the
17 exhaust of the cooled fuel gas seen as output from water or coolant reservoir
18 (65) directed to a demister means (80).

19 Matsunaga does not describe the "water or coolant reservoir (65)..." and does not
20 suggest that this "water or coolant reservoir (65) "exhausts cooled fuel gas into a demister
21 means (80)."

22 Claim 10 has been amended as follows:

23 b. fuel gas (44) output is directed into a heat exchanger means (60) at a heat
24 exchanger tank (60); and into a water or coolant reservoir (65); heat exchanger tank (60)
25 exhaust via a heat exchanger tank exhaust (71);

26 Your applicant respectfully submits that Matsunaga's "Recuperator 3", without

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1 reference to a "water or coolant reservoir (65)" which "exhausts cooled fuel gas into a
2 demister means (80)." teaches away from the structure described and claimed by your
3 applicant.

4 Your applicant, with the clarification of the present invention relative to the
5 application of Matsunaga and with the amendment of Claim 10 as indicated, respectfully
6 requests the Examiner to withdraw the Objection over Matsunaga in view of Feters et al.
7 and Funk and to allow the application as amended.
8

9 2. Re: Matsunaga and "the heat exchanger exhaust 8 being directed via supply way 10
10 to a fuel conditioner means".

11 At paragraph 5, page 6 the Examiner states that Matsunaga discloses that "...the
12 heat exchanger exhaust 8 being directed via supply way 10 to a fuel conditioner
13 means(i.e., methane fermentation tank 9) containing a bubble forming means (i.e., a
14 diffuser 12).

15 The Examiner's attention is again respectfully drawn to "heat exchanger exhaust"
16 of your applicant's invention being directed to a "water or coolant reservoir (65)" which
17 "exhausts cooled fuel gas into a demister means (80)." The demister means (80) structure
18 is described at page 13/lines 8-13 of your applicant's application as follows:

19 *The demister means (80) accumulates some portion of the water vapor by*
20 *condensation forming condensate (83). In the preferred embodiment the demister*
21 *means (80) is comprised of the input via at least one tube (81) and, as is*
22 *represented in Fig. 3, a flow diagram, a plurality of tubes 1...n (81) or other*
23 *equivalent means with the condensate (83) accumulated in the demister means*
24 *(80) and with the condensate (83) periodically drained from the demister means*
25 *(80) by a condensate drain means (84) comprised generally of a valve and piping*
26 *means discharging into a reservoir or other place for discharge of the condensate*
27 *(83).*

28 Your applicant respectfully submits that there is no similar structure described in
Matsunaga re: "a fuel conditioner means(i.e., methane fermentation tank 9) containing a

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1 bubble forming means (i.e., a diffuser 12)." Your applicant refers the Examiner to
2 Matsunaga page 1 Abstract and the statement

3 "a pyrolyzer 1 is fed to a heat recovering apparatus 3 to recover heat and then,
4 fed to a methane fermentation tank 9 in which methane producing bacterium
exists as preferential seed and methane is produced by methane fermentation."

5 Your applicant also draws the Examiner's attention to that portion of the
6 Matsunaga patent at page 5, paragraph 0019-0020, stating:

7 the mixed gas introduced from the gas holder 5 is pressurized through a
8 conduit 10, and the methane fermentation tank 9 is supplied. [0020] the
9 methane fermentation tank 9 -- the seed-fungus supply means 13 and a methane
10 fermentation tank -- warming -- a means 19 attaches and the diffuser 12 is
11 installed by said tank 9 pars basilaris ossis occipitalis. The seed-fungus supply
12 means 13 has the function which carries out optimum dose supply of the
13 methanation fungus body 11 obtained by performing enrichment culture timely
14 at the methane fermentation tank 9 to the seed fungus extracted from the nature by
15 making a methanol, hydrogen, a carbon monoxide, or formic acid into a
16 substrate. a methane fermentation tank -- warming -- the means 19 has the
17 function adjusted to the temperature suitable for methane fermentation by
18 measuring the temperature of the reaction mixture of the methane fermentation
19 tank 9, and supplying the warm water which was able to be warmed with the
20 heat collected from recuperator 3. A diffuser 12 has the function to make the
21 mixed gas pressurized from the compressor 7 form into detailed air bubbles.

22 It is appreciated that the structure of "fermentation tank 9" is not described.
23 However, the description as "a seed-fungus supply having the function to carry out
24 optimum dose supply of the methanation fungus body 11..." is noted. Your applicant
25 respectfully suggests that the "fuel conditioner means (i.e., methane fermentation tank 9)
26 containing a bubble forming means (i.e., a diffuser 12)" is a structure which teaches away
27 from the "The demister means (80) accumulates some portion of the water vapor by
28 condensation forming condensate (83)..." which receives the exhaust from the "water or
coolant reservoir (65)" of your applicant's invention.

29 Claim 10 at subpart c. has been amended as follows:

30 (120); the fuel conditioner output (130) is exhausted via pump means (140)
31 exerting a vacuum at the fuel conditioner output (130); fuel conditioner output

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(130) is directed to a storage or combustion at an engine means (160); demister means (80) is comprised of at least one tube (81).

Claim 11 at subpart b. has been amended as follows:

b. demister means (80) is comprised of a demister tank (87) with a demister input (81); ~~comprised of the~~ at least one tube (81) extending downwardly toward a condensate (83) collector (85);

Your applicant respectfully requests the Examiner to conclude that the structure of Matsunaga illustrates "The absence of a feature similar to the feature or features of the present invention". Your applicant respectfully urges the Examiner to conclude that Matsunaga teaches away from the disclosed and claimed invention and thus is not appropriately a basis of rejection under 103. Your applicant respectfully requests the Examiner to withdraw the 35 USC 103 rejection and to allow the application.

3. Re: Funk and "demister".

The Examiner at page 7 states that Funk teaches a demister means (i.e., knock out drum 41; column 9, lines 25-30. The examiner states that it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a demister means in the modified apparatus of Matsunaga, on the basis of suitability for the intended use thereof, because the demister means allows for any remaining moisture in the pyrolysis gas to be removed, as taught by Funk.

The "demister" structure of Funk is described, at column 9/lines 25-27, as follows:

Uncondensed gas from quench chamber 29 is directed via line 39 to knock-out drum 41 where any remaining moisture in the gas is removed on a demister pad.

The Examiner's attention is respectfully drawn to the structural distinction between the "demister pad" of Funk and the structure described at page 13/lines 8-13 and

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1 as claimed by your applicant. Your applicant respectfully requests the Examiner to
2 withdraw the rejection in view of the distinction of structure seen in Funk and to allow
3 the application as amended.
4

5
6 **Law regarding 35 U.S.C. 103.**

7 The absence of a feature similar to the feature or features of the present invention
8 are respectfully argued as references which teach away from the disclosed and claimed
9 invention and thus are not appropriately a basis of rejection under 103. *In re Gurley* 27
10 F.3d 551 at 553(1994 cafc). In general a reference will teach away if the line of
11 development flowing from the references disclosure is unlikely to be productive of the
12 result sought by the applicant. The structural absence, in Matsunaga, of a heat
13 exchanger means (60) having water or coolant supply inlet (67) and water or coolant
14 discharge (69), as found in your applicant's invention, does not flow toward the structure
15 of the present invention. The Matsunaga structure of "fermentation tank 9" described as
16 "a seed-fungus supply having the function to carry out optimum does supply of the
17 methanation fungus body 11..." is a structure which teaches away from the "The
18 demister means (80) accumulates some portion of the water vapor by condensation
19 forming condensate (83)..." of your applicant's invention and must be found to teach
20 away from the invention disclosed and claimed by your applicant. The structural
21 distinction between the "demister pad" of Funk teaches away from the demister (80)
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1 described and claimed by your applicant.

2 The Examiner has urged prior art alone and in combination as rendering obvious
3 the present invention. However, there is not demonstrated teaching, suggestion or
4 motivation to so combine the several components in the manner done by your present
5 applicant. Such recitation of prior art does not form a basis for rejection as obvious. C.R.
6 Bard, Inc. v. M3 Systems, Inc., 157 F.3d 1340, 1361, 48 USPQ2d 1225, 1240 (Fed. Cir.
7 1998), rehearing denied & suggestion for rehearing in banc declined, 161 F.3d 1380 (Fed.
8 Cir. 1998) ("The ultimate question is whether, from the evidence of the prior art and the
9 knowledge generally available to one of ordinary skill in the relevant art, there was in the
10 prior art an appropriate teaching, suggestion, or motivation to combine components in the
11 way that was done by the inventor."); Chiuminatta Concrete Concepts, Inc. v. Cardinal
12 Industries, Inc., 145 F.3d 1303, 1312, 46 USPQ2d 1752, 1759 (Fed. Cir. 1998) ("for a
13 claim to be invalid for obviousness over a combination of references, there must have
14 been a motivation to combine the prior art references to produce the claimed invention.");
15 Kahn v. General Motors Corp., 135 F.3d 1472, 45 USPQ2d 1608 (Fed. Cir. 1998), cert.
16 denied, 119 S. Ct. 177 (1998); Fromson v. Anitec Printing Plates, Inc., 132 F.3d 1437,
17 1447, 45 USPQ2d 1269, 1276 (Fed. Cir. 1997), cert. denied, 119 S. Ct. 56 (1998) ("there
18 is no suggestion or teaching in the prior art to select from the various known procedures
19 and combine specific steps, along with a new electrical structure, in the way that is
20 described and claimed by [the patentee]."); Gambro Lundia AB v. Baxter Healthcare
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1 Corp., 110 F.3d 1573, 1578-79, 42 USPQ2d 1378, 1383, 1384 (Fed. Cir. 1997) ("the
2 record must provide a teaching, suggestion, or reason to substitute computer-controlled
3 valves for the system of hoses in the prior art. The absence of such a suggestion to
4 combine is dispositive in an obviousness determination."; "Without a suggestion or
5 teaching to combine, [the accused infringer's] case of obviousness suffers a significant
6 deficiency."); Kolmes v. World Fibers Corp., 107 F.3d 1534, 1541, 41 USPQ2d 1829,
7 1833 (Fed. Cir. 1997) (the district court did not err in holding the patent in suit not invalid
8 for obviousness; the patent concerned a cut-resistant yarn for use in making products such
9 as gloves, which, unlike prior art yarns, did not use metallic components such as wire; the
10 yarn includes two core strands wrapped in opposite directions around two covering
11 strands; one core strand is fiberglass; the other core strand and the covering strands are
12 nylon or other material; the patent's claim required, inter alia, that there be a two strand
13 core and that the covering strands be "wrapped about said core at the rate of 8-12 turns
14 per inch."; a prior art reference showed a yarn with a wrapping rate of 2-24 turns per inch,
15 but the reference disclosed the use of wire, and the accused infringer "has shown no
16 suggestion or motivation to modify the teaching of the [reference] with regard to non-
17 metallic fibers."); Litton Systems, Inc. v. Honeywell, Inc., 87 F.3d 1559, 1568, 39
18 USPQ2d 1321, 1327 (Fed. Cir. 1996) ("[N]one of the prior art references, alone or in
19 combination, teach or suggest a method [specified in the patent's claims]. The prior art
20 simply does not contain many limitations in the claimed method. Furthermore, the record
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discloses no teaching or suggestion to combine any of these references. The absence of a suggestion to combine is telling in an obviousness determination."); B.F. Goodrich Co. v. Aircraft Braking Systems Corp., 72 F.3d 1577, 37 USPQ2d 1314 (Fed. Cir. 1996), discussed at N. 12.10(1) infra; Pro-Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 37 USPQ2d 1626 (Fed. Cir. 1996); Beachcombers, International, Inc. v. WildeWood Creative Products, Inc., 31 F.3d 1154, 1161, 31 USPQ2d 1653, 1659 (Fed. Cir. 1994) (the patent claims in suit were not obvious in view of the prior art because the art did "not remotely suggest configuring" the device as required by the claim); Heidelberg Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 1072, 30 USPQ2d 1377, 1379 (Fed. Cir. 1993) ("When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination."). Texas Instruments Inc. V. U.S. Int'l Trade Comm'n, 988 F.2d 1165, 26 USPQ2d 1018 (Fed. Cir. 1993) for the proposition that obviousness is not supported where the references do not demonstrate to combine to produce the invention as presently disclosed.

The issue of viewing the present invention as a template is an inappropriate basis for rejection on the basis of obviousness. Your applicant addresses the matter of a "template" in light of the apparent marked structural distinction between Matsunaga and the present invention. The prior art "references in combination do not suggest the invention as a whole claimed in the ... patent. Absent such a suggestion to combine the

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1 references, respondents can do no more than piece the invention together using the
2 patented invention as a template." *Heidelberger Druckmaschinen AG v. Hantscho*
3 *Commercial Products, Inc.*, 21 F.3d 1068, 30 USPQ2d 1377 (Fed. Cir. 1993 where the
4 court held that "The motivation to combine references can not come from the invention
5 itself."
6

7 The applicant respectfully submits that the references, alone and in
8 combination, otherwise must constitute improper use of hindsight reconstruction. *In Re*
9 *Pleuddeman*, 910 F.2d 823, 828, 15 US PQ2d 1738, 1742 (Fed. Cir. 1990); *In Re*
10 *Mahurkar Patent Litigation*, 831 F.Supp. 1354, 28 US PQ2d 1801 (N.D. Ill. 1993). The
11 cases cited stand for the rule that decomposing an invention into its constituent elements,
12 finding each element in the prior art, and then claiming that it is easy to reassemble these
13 elements into the invention, is a forbidden ex post analysis. The applicant submits that it
14 is impermissible to use the claimed invention as an instruction manual or template to
15 piece together the teachings of the prior art so that the claimed invention is rendered
16 obvious. The references simply do not teach to combine the requisite features of your
17 applicant's invention. "Before the PTO may combine the disclosures of two or more
18 prior art references in order to establish Prima Facie obviousness, there must be some
19 suggestion for doing so, found either in the references themselves or in the knowledge
20 generally available to one of ordinary skill in the art.(IN RE Jones, 958 F.2d 347, 351, 21
22 USPQ2d 1941, 1943-44 (Fed. Cir. 1992)). "Evidence of a suggestion, teaching, or
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1 motivation to combine prior art references may flow, inter alia, from the references
2 themselves, the knowledge of one of ordinary skill in the art, or from the nature of the
3 problem to be solved. See Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617. Although a
4 reference need not expressly teach that the disclosure contained therein should be
5 combined with another, see Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461,
6 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997), the showing of combinability, in
7 whatever form, must nevertheless be "clear and particular." Dembiczak, 175 F.3d at 999,
8 50 USPQ2d at 1617." Winner International Royalty Corporation v. Ching-Rong Wang,
9 202 F.3d 1340(CAFC 2000).

12 The applicant respectfully requests the Examiner to withdraw the 103 rejections
13 in light of the argument, amendments and responses submitted.

15 The applicant has set forth arguments and law for the basis upon which prior art
16 cited under 35 U.S.C. 103 should not result in a conclusion of obviousness for the present
17 invention as specified and claimed. The applicant has presented features of the present
18 invention which are not found within the claims of either reference patent. The applicant
19 has presented law and argument to support the contention that the rejection of claims,
20 under 35 U.S.C. 103 should be withdrawn and now respectfully requests the Examiner to
21 withdraw the rejections.

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SUMMARY OF THE AMENDMENT AND RESPONSE

Your applicant has made a good faith effort to respond to the Examiner's Action of May 30, 2006. Your applicant has addressed each informality, Objection and Rejection raised by the Examiner. Your applicant respectfully requests the Examiner to accept the revised Amendments and arguments, to withdraw the Objections and Rejections and to allow the claims as amended.

Respectfully submitted,


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